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UNITED STATES DEPARTMENT OF AGRICULTURE  
Rural Electrification Administration  
Technical Standards Committee "A"

Supplement No. 3, April 1986, to  
REA Bulletin 43-5, List of  
Materials Acceptable for Use on  
Systems of REA Electrification Borrowers

The attached pages for the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of January through March 1986. The following changes should be made in order to keep it up to date. Pages with a comma between are on the same sheet, both being changed.

Add <u>New Page</u>	Remove <u>Page</u>	Add <u>New Page</u>	Remove <u>Page</u>
d	d	cu	cu
h	h	ea-1	ea-1
k-2	k-2	ea-2	ea-2
m-1	m-1	eb	eb
m-2	m-2	se	se
v	v	vx	
y-1	y-1	Uan-1.1	Uan-1.1
z-1	z-1	Uan(1)	Uan(1)
ae(1)	ae(1)	U fw	U fw
an-3.2	an-3.2	U fz-1	U fz-1
an(1.1), an(2.1)	an(1.1), an(2.1)	U gp-2	U gp-2
an (3.1)	an (3.1)	U hb(1)	U hb(1)
ar	ar	U hp(4)	U hp(4)
bv	bv	U hp(5), U hq(1)	U hp(5), U hq(1)
bx(Cond.)	bx(Cond.)	U hq(3)	
by(Cond.)	by(Cond.)	U hr	U hr

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JUN 25 1986

RECEIVED



c - Bolt, machine

Applicable Specification: ANSI C135.1,  
"Standards for  
Galvanized Steel Bolts and  
Nuts" except that the lengths  
are in the ranges given below.

Applicable Sizes : 1/2 inch diameter, 6 through  
10 inch length

5/8 inch diameter, 6 through  
24 inch length

3/4 inch diameter, 6 through  
26 inch length

7/8 inch diameter, 6 through  
28 inch length

The following manufacturers have shown compliance with the applicable  
specifications for machine bolts:

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Hughes Brothers  
\*Joslyn Manufacturing Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
\*Portland Bolt & Manufacturing Company  
Power Line Hardware  
Steel City Bolt & Screw Co., Inc.  
Utilities Service Company



\*"Static proof" design available.

d  
April 1986

d - Washers  
FLAT ROLLED STEEL

Size, inches:	2-1/4x2-1/4	3 x 3	4 x 4	4 x 4	1-3/8 round	1-3/4 round
Thickness, in.:	3/16	1/4	3/16	1/2	12 gauge	10 gauge
Hole Diam., in.	13/16	13/16	13/16	13/16	9/16	11/16
C & C Spacer	4					
Chance	6814	6817	6818	6819-1/2	6803	6805
Dixie	D6814	D6817	D6818	D6819-1/2	D6803	-
Hughes	SW2-70	SW3-70	SW4-70	SW4-70(1/2)	RW1-3/8-50	-
Joslyn	J1076	J1079	J1080	J1473	J1086	J1088
Kortick	K1553	K1555	K1557	K1559-1/2	K1524	K1525
McGraw-Edison	DF2W5	DF2W7	DF2W10	DF2W15	DF1W2	DF1W3
Power Line						
Hardware	SWF225A	SWF33B	SWF44A	-	-	-
Utilities						
Service	5485	5487A	5488	5490A	5478	5479

CURVED CAST

Size, inches:	2-1/4x2-1/4	3 x 3	3 x 4	4 x 4	
Thickness, in.:	1/4	5/16	7/16	1/2	
Hole Diam., in.:	11/16	11/16	15/16	13/16	
Barron Bethea (N)	GCW-1A	GCW-31	CRW-4A	GCW-41	-
Bethea Metals (A)	AWC-22-5	AWC-33-5	AWC-34-7	AWC-44-6	-
Bethea Electrical (A)	-	WC-33-5	WC-34-7	WC-44-6	
Continental (N)	-	CW-33-5	CW-34-7	CW-44-6	
Flagg (MIF)(M)	P141	P143	P120	P144	
Power Line Hardware (M)	CSW-33	CRW-34	CSW-44		
Universal Electric (A)	UW-225	UW-335	UW-347	UW-446	

CURVED ROLLED STEEL

Joslyn (Steel) J114

FLAT CAST

Barron Bethea (N) BB-214  
Flagg (MIF) (N) P56A

SPURRED

3" Round, 3/16" Thick, 13/16" Hole

Continental (N) TCSF-30-6  
Flagg (MIF) (M) PX159A

(A) Aluminum Alloy  
(M) Malleable Iron  
(N) Nodular Iron

h  
April 1986

h - Brace, crossarm, steel

"Wherever item h is shown on a construction drawing,  
use a brace from page cu."

i  
July 1985

i - Bolt, carriage

Applicable Specification: ANSI C135.1, "Standards for  
Galvanized Steel Bolts and  
Nuts."

Applicable Sizes : 3/8 inch diameter, 3 through  
6 inch length

1/2 inch diameter, 3 through  
6 inch length

The following manufacturers have shown compliance with the applicable  
specifications for carriage bolts.

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Hughes Brothers  
Joslyn Manufacturing Company  
Kortick Manufacturing Company  
McGraw-Edison Company  
Utilities Service Company





k - Insulators, suspension

ANSI Class	52-3	52-4	52-5	52-6
Type	Ball & Socket	Clevis	Ball & Socket	Clevis
Disc Diameter	10"	10"	10"	10"
M & E Rating, lbs.	15,000	15,000	25,000	25,000
Leakage, inches	11-1/2	11-1/2	11	11
Flashover: kV: Dry-Wet	80 - 50	80 - 50	80 - 50	80 - 50
NOTES	(2)	(1)	(2)	

Manufacturer

Catalog Number

ICI (Pinco)	L1060	L1070	L1500	L1570
Lapp	8200	8100	301425	2300
Locke	20S840	20S580	30S255	30S257
Porcelain Prod. (Knox)	81022	81012	-	-
Sediver	-	CT-8R2	-	-

Notes: (1) Use two for 24.9/14.4 kV deadends.  
(2) To be used only on transmission lines.



Conditional List  
k(2)  
July 1985

k - Insulator, Suspension

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Sediver</u>		
10" suspension insulator	997(7/27/72)	To obtain experience.
N-8R2 (ball & socket, 20,000 lbs.)	1068(6/26/75)	
CT-14R2 (clevis, 30,000 lbs.)	1186(5/8/80)	Same as above.
N-14R2 (ball & socket, 30,000 lbs.)	1175(11/2/79)	
	1297 (4/11/85)	

1 - Clamp, deadend

DISTRIBUTION

2-Bolt Straight Line, Aluminum Alloy

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>*C &amp; R Products</u>		
Aluminum alloy deadend	918 (5/15/69)	Same as above.
Catalog No. CR-15-180		
(No. 2 and No. 4 ACSR)		
<u>*Fargo</u>		
Aluminum alloy deadend	1258 (5/5/83)	Same as above.
Catalog No. GD-961A		
side opening keeper	1144 (8/3/78)	
(No. 4 and No. 2 ACSR)		
Catalog No. GD-972A	791 (4/30/64)	
(2/0, 3/0, 4/0 ACSR)		

\*Straight line deadend clamps are applicable for urban construction where tensions are moderate and on lines often worked hot.

m-1  
April 1986

m - Clamp, suspension

2 BOLT - DISTRIBUTION

	<u>Copper &amp; CWC</u>	<u>ACSR with 4</u>	<u>Straight or 2</u>	<u>Formed 1/0 &amp; 2/0</u>	<u>Armor Rods 3/0 &amp; 4/0</u>
American Connector	FLS-53	ALS-62	ALS-62	ALS-86	ALS-105
Anderson/Square D	MS-46-N	MS-60-N	MS-70-N	HAS-85-N	HAS-104-N
Barron Bethea	FWG-1	FWG-2	FWG-3	FWG-4	-
Bethea Electrical	FS-46-N	GW-1-N	LS-0-N	LS-1-N	LS-2-N
Brown Boveri Elec.	6240	6241	6242	6243	6244
C & R Products	-	-	-	CRSC-1	CRSC-2
Continental Electric	FSC-46-N	FSC-60-N	SC-70-N	SC-85-N	SC-105-N
Dulmison	-	-	-	-	AGS*
Joslyn (Brewer Titchener)	6240	6241	6242	6243	6244
Knox	6240A-U	6241A-U	6242A-U	6243A-U	6244A-U
Lapp	305740N	306027N	306028N	306029N	306030N
Ohio Brass	83044	83064	83074	83084	83104
Preformed	-	-	-	-	AGS*

\*Accepted for larger sizes.

m - Clamp, Suspension

ANGLE - DISTRIBUTION  
No. 2 & 4 ACSR  
Plus Rods

2-BOLT TRANSMISSION  
For 3/8" Steel Overhead  
Ground Wire

-	American Connecotr	FLS-53
AAC-68-90	Anderson/Square D	MS-46-N
-	Barron Bethea	FGW-1
RALS-1	Bethea Electrical	FS-46-N
AC-75	Continental	FSC-46N
GD-907A	Fargo	-
2300	Brown Boveri Electric	6240
2300	Joslyn (Brewer-Titchener)	6240
2300	Knox	6240A-U
306092	Lapp	305740N
82860	Ohio Brass	83044
AC-1660	Power Line Hardware	-

<sup>n</sup>  
Oct. 1985

n - Bolt, double arming

Applicable Specification: ANSI C 135.1, "Standards for Galvanized Steel Bolts and Nuts."

Applicable Sizes : 5/8 inch diameter, 12 inch through 24 inch length

3/4 inch diameter, 20 inch through 24 inch length

The following manufacturers have shown compliance with the applicable specifications for double arming bolts:

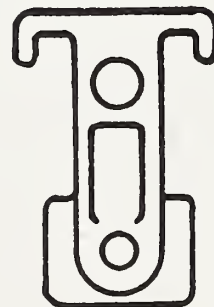
A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Hughes Brothers  
\*Joslyn Manufacturing and Supply Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
Portland Bolt & Manufacturing Company  
Power Line Hardware  
Steel City Bolt & Screw Co., Inc.  
Utilities Service Company



\*"Static proof" designs available.

v - Guy Attachment  
for 5/8" bolt

<u>Type:</u>	<u>Formed Strap</u>	<u>Angle Bolt Eye</u>	<u>Guy Hook</u>	<u>Pole Eye Plate</u>
<u>Maximum Working Load Rating</u>	<u>23,130 N (5200 lbs.)</u>	<u>23,130 N (5200 lbs.)</u>	<u>23,130 N (5200 lbs.)</u>	<u>37,800 N (8500 lbs.)</u>
Anderson Elec./ Square D	-	-	-	GSP-05
Barron Bethea	-	-	GH-5*-	-
Bethea Metals	-	-	AGA56*	FPE5-6
Bethea Electrical	-	-	AG-5*	PE5-6A
Champ	-	-	CH58GH*	CH21PE
Chance	5004	0100	C203-0168*	-
Continental Electric	-	-	GAD-56-4*	PEP-66-45
Dixie	D5004	D0100	DD-9460, DD-9462*	-
Flagg (MIF)	-	-	P151A, P151X*	PX88
Joslyn	J25164	J6500	J6555, J6556	-
Kortick	K4035, K4047	K3140	-	-
McGraw-Edison	DG6H1	DG11E1	DG21H1 DG21H2	-
Power Line Hardware	-	-	HGA-58C*	PGA-548
Universal Electric	-	-	UGA56*	-
Util. Service	31030	5531	-	-



\*This hook may also be used in place of the wrapped guy arrangement in assemblies E3-2 and E3-3.

Conditional List

v

July 1985

v - Guy attachment

Manufacturer

Meeting No.  
and Date

Conditions

Joslyn

Pole Band, with cone head  
bolt, J-6281 and guy clip  
J-6275

745  
8/16/62

To obtain experience.  
For distribution lines  
only and 10,000 lbs  
maximum loading.

J-6280 (for 6" to 10" pole)

J-6270 (for 8" to 14" pole)



y - Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

DISTRIBUTION GUY STRAND

Grade Size	Siemens Martin		High Strength (HS)		Extra High Strength (EHS)		
	1/4"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"
Manufacturer							
Alcan Cable	X	X	X	X	X	X	X
Armco							
Steel Corp.	X	X	X	X	X	X	X
Bethlehem							
Steel	X	X	X	X	X	X	X
Bridon	X	X	X	X	X	X	X
American Corp.							
CF & I	X	X	X	X	X	X	X
Cal-Wire	X	X	X	X	X	X	X
Davis Walker	X	X	X	X	X	X	X
Florida Wire							
and Cable	X	X	X	X	X	X	X
Indiana Steel							
and Wire	X	X	X	X	X	X	X
National Strand							
Products	X	X	X	X	X	X	X
Paulsen Wire							
Rope Corp.	X	X	X	X	X	X	X
Seal Wire Co.	X	X	X	X	X	X	X
Southwire	X	X	X	X	X	X	X
Texstrand							

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

y - Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

TRANSMISSION GUY STRAND

Grade Size	High Strength (HS)					Extra High Strength (EHS)				
	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
<u>Manufacturer</u>										
Alcan Cable	X			X	X	X			X	X
Armco Steel Corp.	X		X	X	X	X		X	X	X
Bethlehem Steel	X			X	X	X		X	X	X
Bridon American Corp.	X		X	X	X	X	X	X	X	X
CF & I	X		X	X	X	X		X	X	X
Cal-Wire	X	X	X	X	X	X	X	X	X	X
Davis Walker	X	X	X	X	X					
Florida Wire and Cable	X	X	X	X	X	X	X	X	X	X
Indiana Steel and Wire	X	X	X	X	X	X	X	X	X	X
National Strand Products						X		X	X	
Paulsen Wire Rope Corp.	X			X	X	X			X	X
Seal Wire Co.	X			X	X	X			X	X
Southwire	X	X	X	X	X	X	X	X	X	X
Texstrand	X					X		X		X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

z - Anchors, Expanding and Plate

DISTRIBUTION

Designated Maximum holding power-lbs.		6000	8000	10,000	12,000
Min. Area - sq. in.		90	100	120	135
Rod Dia. - inches		5/8	5/8	3/4	3/4
Rod Length - feet		7	7	8	-
	<u>Type</u>				
Chance	8 way	88135	88135	88135	88135
Dixie	4 way Plate	D88100-G -	D88115-G D7502-G	D88135-G -	D88135-G D7504-G
Everstick	3 way 4 way	834 -	836 -	8310 84-3/4	- -
Grip-Tite	8 way	A322086G	A322088G	A322812G	A322812G
Joslyn	8 way Plate	J8100-G -	J8115-G J7502-G	J8135-G J7503-G	J8135-G J7504-G
McGraw-Edison	4 way	DA1E5	DA1E6	DA1E6	DA1E7
Power Line Hardware	8 way	8-100G	8-115G	8-135G	8-135G
South Central	8 way	-	84115AG	84135AG	84135AG
Utilities Service	8 way Plate	C88100-G -	C88115-G C617-G	C88135-G C622-G	C88135-G C822-G

NOTE: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

z-2  
July 1985

z - Anchors, plate

Applicable Specification: "REA Specification for Steel Plate Anchors," T-3

TRANSMISSION

Minimum Area 400 sq. in.

Chance

X24 - 3/4

Grip-Tite

XP24 - 3/4 - G

Joslyn

J3524 - 3/4 - G

McGraw-Edison

DA4P7 - 3/4 - G

Power Line Hardware

CP-24G

NOTE:

Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

ae - Surge Arresters, Substation\*  
(Lightning Arresters)

<u>Manufacturer</u>	<u>Type</u>	<u>Accepted Ratings - kV</u>	<u>Manufacturer's Classification</u>
General Electric	Alugard	3, 9, 10, 18	Distribution
Joslyn	2RS	9/10, 18	Distribution
	Q	3, 9/10, 18	Distribution
Kearney	Unigap	3, 9, 10, 18	Distribution
Mc-Graw Edison	ES	3, 9/10, 18	Distribution
	F3	9-120	Intermediate
	G	3-144	Station
Ohio Brass	DA	3, 9, 10, 18	Distribution
Westinghouse	LV	3-20	Distribution
	IVL	3-120	Intermediate
	CPL	3-312	Station

- \* For instructions concerning application at substations, refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage ratings in accordance with the line voltage and the type of construction (grounded or ungrounded).

Conditional List  
ae(1)  
April 1986

ae - Surge Arresters, Distribution  
Metal Oxide

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Joslyn</u> Surge arresters, distribution metal oxide type, ZQ 9, 10, 18 kV	1317 3/27/86	To obtain experience
<u>McGraw-Edison</u>  Surge arresters, distribution, metal oxide type, AZL 9, 10, 18 kV	1287 9/27/84	To obtain experience
<u>Ohio Brass</u>  Surge arresters, distribution metal oxide type Dynavar, DV 9, 10, 18 kV	1283 7/12/84	To obtain experience

Note: Only arresters with top gaps and without ground lead disconnectors  
are acceptable.

an - Transformers, Power  
Three-Phase, Step-Down  
For Distribution Substation Use

Primary Voltage-kV	KVA					MVA									
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30	
<u>Central Moloney</u>															
34.4	X	X	X	X	X	X	X	X							
43.8	X	X	X	X	X	X	X	X	X						
67.0	X	X	X	X	X	X	X	X	X						
<u>Federal Pacific</u>															
67.0							X			X	X	X	X	X	
115										X	X	X	X	X	
138										X	X	X	X	X	

Transformers 5 MVA and larger also accepted as load tap changing transformers using Federal Pacific type TC-525 load tap changers.

<u>General Electric</u>															
34.4	X	X		X	X	X	X	X	X	X	X	X			
43.8	X	X		X	X	X	X	X	X	X	X	X	X	X	
67.0	X	X		X	X	X	X	X	X	X	X	X	X	X	
115							X	X	X	X	X	X	X	X	
138							X	X	X	X	X	X	X	X	

Transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric Types LR72, LR65 and LRT-200 load tap changers.

<u>Kuhlman</u>															
34.4					X	X	X	X	X	X	X		X		
43.8					X	X	X	X	X	X	X	X	X		
67.0					X	X	X	X	X	X	X	X	X	X	
115							X	X	X	X	X	X	X		
138							X	X	X	X	X	X	X	X	

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis Types TLS and TLH-21 load tap changers.

an - Transformers, Power  
Three-Phase, Step-Down  
For Distribution Substation Use

Primary Voltage-kv	kVA						MVA							
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
<u>McGraw-Edison</u>														
34.4		X		X	X	X	X	X	X	X				
43.8		X		X	X	X	X	X	X	X				
67.0		X		X	X	X	X	X	X	X				
115											X		X	
138												X		

Transformers 5 MVA and larger also accepted as load tap changing transformers using McGraw-Edison Types 550, 550B, and 550C load tap changers.

ASEA Electric

34.4							X	X	X	X	X			
43.8														
67.0				X		X	X	X	X	X	X	X	X	X
115							X	X	X	X	X	X	X	X
138							X	X	X	X		X	X	X

Transformers 5 MVA also accepted as load tap changing transformers using ASEA Electric Type UZD load tap changers.

Westinghouse

34.4		X	X	X	X	X	X	X	X				X	
43.8		X	X	X	X	X	X	X	X	X	X			
67.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X
115											X	X	X	X
138											X	X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A, UTT-B and UVW load tap changers.



an - Transformers, Distribution, Pole Type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Dowzer</u> 14.4/24.9 kV and Dual Voltage	824 9/19/65	To obtain experience.
Conventional, single bushing Type CR	1011 3/1/73	
Self-protected, single bushing Type CSP-R		
Conventional, two bushing Type CD		
<u>General Electric</u> 7.2/12.5, 7.62/13.2, 14.4/24.9 kV and Dual Voltage	1316 3/6/86	To obtain experience.
Single-phase, single bushing, and two bushing with internal Tranquell Under-oil Arrester		
<u>Tarrant</u> 7.2/12.5 kV and 7.62/13.2 kV	791 4/30/64	To obtain experience.
Conventional, single bushing Type CB-1		
Conventional, two bushing Type CB-2		
Self-protected, single bushing Type SG-1		
May also be obtained with lightning arrester and internal fuse. Types PSG-1 and PSG-2.		
<u>VanTran</u> 14.4/24.9 kV and Dual Voltage	1075 10/16/75	To obtain experience.
Conventional, single bushing Type CR		
Conventional, two bushing Type CD	1095 8/11/76	
Self-protected, single bushing Type CSP-R		

an - Transformers, Power  
Single-Phase, Step-Down  
For Distribution Substation Use

Condition of Acceptance: To obtain experience.

Transformers with 115 kV and 138 kV primary voltage ratings are acceptable with full BIL and with one step reduced BIL.

"X" indicates that acceptable test data have been furnished REA for this rating and for secondary voltages in either 15 kV or 25 kV class.

"S" indicates that performance specifications have been furnished REA and test data are to be submitted when available.

Primary Voltage-kV	kVA Capacity									
	167	250	333	500	833	1250	1667	2500	3333	5000
ASEA Electric 67.0										
ESCO 34.4	X			X	X					
General Electric 43.8 115	S								S	S
Hevi-Duty 34.4 43.8 67.0 115					X	X	X	X	S	S
H. K. Porter (Delta-Star) 34.4 43.8 67.0 115	S	S	S	S	X	S	S	X	X	S
Kuhlman 34.4										
McGraw-Edison 34.4 43.8 67.0	S	S	S					S	S	S
RIE 34.4				S	X	X				

**Condition of Acceptance:** To obtain experience.

Westinghouse

an - Transformers, Power  
Three-Phase, Step-Down  
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kv	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
ASEA Electric														
115														
138														

Transformers 5 MVA and larger also accepted as load tap changing transformers using ASEA Electric Type UZD load tap changers.

Central Molloney

34.4

S

Federal Pacific

34.4

67.0

S S S

S S S

Transformers 5 MVA and larger also accepted as load tap changing transformers using Federal Pacific Type TC-525 load tap changers.

Ferranti-Packard

34.4

S

S

S

S

S

General Electric

34.4

43.8

115

138

S S S

S S S

S S S

Transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric Types LR72, LR65 and LRT-200 load tap changers.

Hevi-Duty

34.4

43.8

67.0

115

138

S S S

S S S

S S S

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A and UTT-B and Siemens Allis Type TLS load tap changers.

ap - Clamp, hot line  
ACSR with armor rods

Clamps listed below have spring action and enclosed thread chambers.

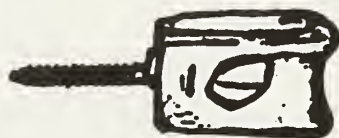
Conductor Size		4/0 & 3/0	2/0	1/0 & 2	4
	<u>Tap Conductor</u>				
Anderson	Aluminum Copper	AH-7 AH-7-GP	AH-4 AH-4-GP	AH-4 AH-4-GP	AH-4 AH-4-GP
Chance	Aluminum Copper	S1540-AA S1540-AC	S1540-AA S1540-AC	S1530-AA S1530-AC	S1530-AA S1530-AC
Electrical Specialty	Aluminum Copper	- -	AHC-2/0 AHC-2/0 GP	AHC-2/0 AHC-2/0 GP	AHC-2/0 AHC-2/0 GP
Fargo	Aluminum Copper	GH-102A GH-102AC	GH-102A GH-102AC	GH-101A GH-101AC	GH-101A GH-101AC
Penn Union	Aluminum Copper	-	-	HLCA-040 HLCA-040	HLCA-040 HLCA-040
Utilco	Aluminum	-	HLC-397	-	HLC-40

ar  
April 1986

ar - Wireholder

Applicable Specification: "REA Specification for Service Wireholders," D-15

	<u>With #22 Wood Screw</u>	<u>With 3/8" x 5" Bolt</u>
Blackburn	SW3	-
Chance	3-11-44	-
Dixie	D3-11-44	-
Joslyn	J089	-
McGraw-Edison	DW1R1	-
Porcelain Products	1986	-
Universal Clay Products	415	-



NOTE: For Triplex type service cable see clevis type wireholders on page "bt."

bu - Connector, grounding  
for transformer or other equipment

<u>Manufacturer</u>	<u>Copper Alloy 1</u>	<u>Plated Copper Alloy 2</u>	<u>Aluminum Alloy 3</u>
Anderson/Square D	GTCL-23A	GTCL-23A-TP	
Blackburn	TTC-4	TTC2P	
Burndy	EQC632C	EQC632C-TN	
Dossert	TGCL8-50	TGCL8-50-SN	
Fargo	GC-207	GC-207P	GA-220
Penn-Union		GSE-C1TN	
Power Line Hardware	TGL-110	TGL-110P	
Tanner		GET-1-TN	
Weaver	TGC-4	TGC-2P	

1 - For use with copper type ground wire.

2 - For use with both copper and aluminum type ground wire.

3 - For use with aluminum type ground wire.

bv  
April 1986

bv, Rods, armor

Aluminum or aluminum alloy rods for use on ACSR

Blackburn	Formed Type
Chance	Formed Type
Dulmison	Formed Type
Helical Line Products	Formed Type
Preformed Line Products	Formed Type

Copperweld rods for copper or CWC conductor

Helical Line Products	Formed Type
Preformed Line Products	Formed Type

Alumoweld rods for aluminum clad steel (Alumoweld)  
overhead ground wire

Helical Line Products	Formed Type
Preformed Line Products	Formed Type

Bronze rods (10 inch length) for jumper protection

Preformed Line Products	Formed Type
-------------------------	-------------



bx - Splice, automatic

<u>Copper</u>	<u>Burndy</u>	<u>Fargo</u>	<u>Reliable</u>
6	ADS6S	GL-111	61
4	ADS4S	GL-112	41
2 x 3		GL-115	-
1/0 x 7	ADS1/0	GL-117	107
2/0 x 7	ADS2/0	GL-118	207
3/0 x 7	ADS3/0	GL-119	307
4/0 x 7	ADS4/0	GL-120	407
<u>CWC</u>			
8A		GL-112	
6A	ADS4	GL-113	47
4A	ADS2	GL-115	27
2A		GL-117	
<u>ACSR</u>	ADS-R Series*	GL-400 Series*	7650 Series*
<u>Aluminum Alloy</u> <u>(6201 and 5005)</u>			
		GL-100A Series	AL55 Series
		GL-1000A Series	

\*For use on distribution conductors 4/0 and smaller only.

Conditional List  
bx  
April 1986

bx - Splice, automatic

DISTRIBUTION

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Fargo</u>		
AWAC 4 - 4/3	1087 (4/1/76)	1. To obtain experience
GLA-105		2. For use on distribu-
AWAC 2 - 4/3		tion systems only.
GLA-110		
AWAC 1/0 - 4/3		
GLA-115		
266.8 kcmil ACSR 18/1	B55 (2/12/86)	Same as above.
GL-1315A		
336.4 kcmil ACSR 18/1		
GL-1315A		
477 kcmil ACSR 18/1		
GL-1325A		

by  
July 1985

by - Deadend, Automatic and Formed Type

Conductor Size

<u>Cu</u>	<u>CWC</u>	<u>Fargo</u>	<u>Reliable</u>
-	4A	GD-515	27-SDS
-	6A	GD-513	47-SDS
-	8A	GD-512	-
2 x 3	-	GD-515	271
4	-	GD-512	41LD
6	-	GD-511	61LD

ACSR

\*Fargo

GD-400 Series

\*Preformed

OG-9360 thru 9366  
#OHDE-9534 thru 9540, 4577

\*Reliable

7650 Series

#may only be used with a spool insulator (Item cm) and appropriate clevis for neutral and secondary applications.

Aluminum Alloy  
(6201 and 5005)

Fargo

GD-A Series

Preformed

OG-9360 thru 9366

Reliable

AL Series

\*For use on distribution conductors 4/0 and smaller only.

Conditional List  
by  
April 1986

by - Deadends, automatic and formed type

FORMED TYPE

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Preformed Line Products</u>		
AWAC 4 - 4/3 DG-4560	993 (6/8/72)	To obtain experience.
AWAC 2 - 4/3 DG-4562		
AWAC 1/0 - 4/3 DG-4565		

AUTOMATIC TYPE

<u>Reliable</u>		
AWAC 4 - 4/3 5201	1026 (9/27/73)	To obtain experience.
AWAC 2 - 4/3 5202	1035 (2/21/74)	
AWAC 1/0 - 4/3 5204		
<u>Fargo</u>		
AWAC 4 - 4/3 GDA-235	1087 (4/1/76)	To obtain experience.
AWAC 2 - 4/3 GDA-240		
AWAC 1/0 - 4/3 GDA-245		
266.8 kcmil ACSR 18/1 GD-5315A	B55 (2/12/86)	1. To obtain experience
336.4 kcmil ACSR 18/1 GD-5315A		2. For use on distribu- tion lines only.
477 kcmil ACSR 18/1 GD-5325A		

cu - Brace, crossarm, wood

Span, inches	60	60
Drop, inches	<u>18</u>	<u>30</u>
Aluma-Form	6018	6030
American Crossarm & Conduit Company	320	325
Brooks Lumber Company	44680	44681
Cascadian Company	15018	15030
Dis-Tran	DT-60	DT-601
Hatheway Patterson	320-R	325-R
Hughes Brothers	2045-CC	2045-D
Joslyn	J4760R	J4730W-R
Utilities Structures Engineering Incorporated	CU-60-18	CU-60-30

Braces listed below have 26-inch hole spacing. They are to be used in place of the flat steel braces previously listed on page h.

Aluma-Form	AF626
American Crossarm & Conduit	600
Brooks Lumber Company	58128
Dis-Tran	DT-28
Hatheway Patterson	7026
Hughes Brothers	2023
Joslyn	J5526

Brace, crossarm, fiber reinforced plastic

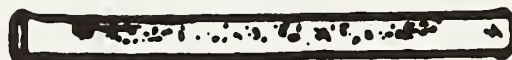
Continental	CRB-28
Hughes Brothers	533
Joslyn	RP-26
Tranpol	CAB-28
Stanley Flagg	FCB26

CX  
July 1985

cx - Splice, oval tube

		<u>Copper</u>			
<u>Conductor Size:</u>	<u>0 x 7</u>	<u>2 x 3</u>	<u>4</u>	<u>6</u>	
National Tel. Supply	464	463	459	457	

		<u>Copperweld-Copper</u>	
<u>Conductor Size:</u>	<u>6A</u>	<u>8A</u>	
National Tel. Supply	460	459	



dz  
July 1985

dz - Clip, Guy Wire

<u>Manufacturer</u>	<u>5/16"</u>	<u>3/8"</u>	<u>7/16"</u>	<u>1/2"</u>
Chance	6453	6454	6455	6456
McGraw-Edison	DJ17C6	DJ17C8	DJ17C10	DJ17C12
Utilities Service	4953	4954	4955	4956

ea-1  
April 1986

ea - Insulator and Stud, post type

DISTRIBUTION

System voltage, kV	12.5/7.2*	12.5/7.2*	24.9/14.4**
Leakage, inches	7-1/2	10	15
Flashover, dry, kV	65	70	95
Flashover, wet, kV	<u>40</u>	<u>50</u>	<u>65</u>

<u>Chance</u>			
7" Stud	C903-1910-04	C903-1911-04	C903-1912-04
1-3/4" Stud	C903-1910-05	C903-1911-05	C903-1912-05

<u>Lapp</u>			
7" Stud	4415P	4420P	4427P
1-3/4" Stud	4315P	4320P	4327P

<u>Ohio Brass</u>			
7" Stud		43400-7040	43401-7040
1-3/4" Stud		43400-7010	43401-7010

<u>Porcelain Products (Knox)</u>			
7" Stud	5115-6510	5120-6510	5127-6510
1-3/4" Stud	5115-6500	5120-6500	5127-6500

TRANSMISSION

System voltage, kV	22	34.5	46
ANSI Class	57-2	57-3	57-4
Flashover, dry, kV	110	125	150
Flashover, wet, kV	<u>85</u>	<u>100</u>	<u>125</u>

<u>Chance</u>			
7" Stud	C903-1002-04	C903-1003-04	
1-3/4" Stud	C903-1002-05	C903-1003-05	

<u>Lapp</u>			
7" Stud	9435	9445	9455
1-3/4" Stud	9335	9345	9355

<u>Ohio Brass</u>			
7" Stud	37620-7040	41640-7040	41650-7040
1-3/4" Stud	37620-7010	41640-7010	41650-7010

<u>Porcelain Products (Knox)</u>			
7" Stud	5135-6512	5145-6512	
1-3/4" Stud	5135-6502	5145-6502	

NOTE: Post Insulators (item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

\*The transverse loading on these insulators shall not exceed the lower of 40 percent of the insulator's ultimate strength and the maximum transverse loading given for the structure in REA Bulletin 50-3.

\*\*The transverse loading on these insulators shall not exceed 40% of the insulations' ultimate strength.



ea - Insulators, horizontal post type

<u>Manufacturer</u>	<u>34.5 kV</u>	<u>69 kV</u>	<u>115 kV</u>
Lapp	F-4745	F-4788	F-70147
Locke	-	LS02513	LS05013
Ohio Brass	43740	43790	47043
Victor Insulators, Inc.	62356	-	-

Conditional List  
ea(1)  
July 1985

ea - Insulator, post type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Victor Insulators, Inc.</u>		
2120 (12.5/7.2 kV)	932	To obtain experience.
2127 (24.9/14.4 kV)	12/4/69	
62055 (22 kV)	1189	
62056 (34.5 kV)	6/19/80	

eb - Bracket, Pole Top  
For Post type Insulators

DISTRIBUTION

<u>Barron Bethea</u> (14.4 or 7.2 kV)	1B-4
<u>Bethea Electrical</u> (14.4 or 7.2 kV)	BPT-58F
<u>Continental</u> (14.4 or 7.2 kV)	PTB-55-8
<u>Flagg (MIF)</u> (14.4 or 7.2 kV)	P526
<u>Joslyn</u> (14.4 or 7.2 kV)	J23333
<u>Lapp (Line Ware)</u> (14.4 or 7.2 kV)	304043
<u>McGraw-Edison</u> (14.4 or 7.2 kV)	DC62B1
<u>Ohio Brass</u> (14.4 or 7.2 kV) (7.2 kV)	84324 89725
<u>Power Line Hardware</u> (14.4 or 7.2 kV)	PTIB-375A
<u>Universal Electric</u> (14.4 or 7.2 kV)	PT-8R

TRANSMISSION

Barron Bethea	1B-4
Bethea Electrical	BPT-58HF
Continental	PTB-66H
Flagg (MIF)	P532
Lapp (Line Ware)	304044
McGraw-Edison	DP29A1
Ohio Brass	84324

NOTE: Pole top bracket (Item eb) and post insulator (Item ea) may be substituted for pole top pin (Item b) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

ec  
July 1985

ec - Bracket, Offset Neutral

Chance	C206-0004
Dixie	D-2353
Joslyn	J2352
McGraw-Edison	DC6N1

sd - Current Transformers  
Outdoor Types

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Balteau Standard</u>		
Type KEWO-110, 15 kV	1212 (5/21/81)	To obtain experience.
Type KEWO-150, 25 kV		
Type KEWO-200, 34.5 kV		
Type KEWO-350, 69 kV		
<u>Electromagnetic Ind.</u>		
Type UMCT, 0.6 kV	1216 (7/23/81)	To obtain experience.
Type UCT, 0.6 kV		

se  
April 1986

se - Voltage Transformers

Outdoor Types

<u>Manufacturer</u>	<u>.6 kV</u>	<u>1.2kV</u>	<u>15 kV</u>	<u>25 kV</u>	<u>34.5 kV</u>	<u>69 kV</u>
Associated Engineering	CL TL		PTT-150 SPOF-100 PTT-110	PTT-150 SPOF-150	POF-200	POF-350
Duncan	DVE-6 DVF-6					
Electromagnetic Industries (Square D)			P05-110	P05-150	P05-200	U3-350-69
General Electric	JVA-0 JVP-0		JVW-5 JVW-110 JVT-150	JVW-6 ET-150 JVT-200	JVW-7 ET-200	ET-350 JVT-350
Sangamo	T6A T7					
Westinghouse	PPM	VOZ-11	VOG-11 APT-150	PTOM-150	APT-200 LPT-350	APT-350

NOTE: The transformer types listed above are acceptable in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

vx - Cross Brace assembly, 3-3/8" x 5-3/8"  
with hardware and fittings (Dwg. TM-110, REA Specification T-7

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>American Crossarm &amp; Conduit</u>	
Item 1-vx	1100-1
Item 2-vx	1100-2
<u>Hughes Brothers</u>	
Item 1-vx	1042-1
Item 2-vx	1042-2
<u>Brooks Lumber</u>	
Item 1-vx	X6685-1
Item 2-vx	X6685-2
<u>Niedermeyer-Martin</u>	
Item 1-vx	N-6714-1
Item 2-vx	N-6714-2
<u>Cascadian</u>	
Item 1-vx	CCC-67-1
Item 2-vx	CCC-67-2

Cross Brace Assembly, 3-5/8" x 7-1/2" Min.  
with hardware and fittings

Applicable Specification: T-8  
Drawing: TM-110A

<u>Manufacturer</u>	<u>Catalog No.</u>
American Crossarm & Conduit	1200
Brooks	X-6695
Cascadian	CCC69
Hughes	2061A
Niedermeyer-Martin	N6721





January 1986

U ae - Arresters, Surge  
(For underground system pole risers or pad-mounted equipment)

(Shielded for Underground System Pad-Mounted Equipment)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Joslyn</u> Metal Oxide, elbow Arrester Type ZE, 10, 18kV	1297 4/11/85	To obtain experience
<u>McGraw-Edison</u> Metal oxide, AMOV1 U.D. 10, 18 kV	1223 11/19/81	To obtain experience.
<u>RTE</u> Metal Oxide Elbow Arrester M.O.V.E. 9, 18 kV	1185 4/24/81	To obtain experience.

(For Underground System Pole Risers)

<u>General Electric</u> Metal Oxide, Tranquell** U.D. II 9, 10, 18 kV	1292 1/10/85	To obtain experience.
Metal Oxide, Tranquell Intermediate Class 9, 10, 18 kV	1197 10/9/80	To obtain experience.
<u>Joslyn</u> Metal Oxide, Type ZJ U.D. 9, 10, 18 kV	1266 9/22/83	To obtain experience.
Metal Oxide, Type ZR Intermediate Class* 9, 10, 18 kV	1266 9/22/83	To obtain experience.
<u>McGraw-Edison</u> Metal Oxide, AVZ 1B 9/10, 18 kV	1223 11/9/81	To obtain experience.
Metal Oxide AZR Intermediate class 10, 18 kV	1287 9/27/84	To obtain experience.
<u>Ohio Brass</u> Metal Oxide, DynaVar VR UD 9, 10, 18 kV	1236 6/10/82	To obtain experience.
Metal Oxide, DynaVar Intermediate Class 9, 10, 18 kV	1236 6/10/82	To obtain experience.

\*Has intermediate class arrester characteristics but does not have intermediate class venting capability.

\*\*A non fragmenting U.D. II Arrester is available for 9 & 10 kV designs at higher cost when specified.

U an-1.1  
April 1986

U an - Transformers, distribution  
pad-mounted, dead-front

(For underground application)

Applicable Specifications: "REA Specifications for Pad-Mounted Transformers," U-5.

<u>Manufacturer</u>	<u>Single Phase</u>	<u>Three-Phase</u>
Central Moloney (2, 4)	"REA-LP" 25-167 kVA	
Dowzer (3, 4)	"METRI-PAD" 25-167	"PM3W-R" 75-500 KVA
ERMCO (1) (4, 6) (2, 4)	"Trimline" 10-50 kVA "Low-Profile" 10-50 kVA "Low-Profile" 75 kVA	
General Electric (2, 4)	"Mini-Pad III - REA" 10-167 kVA	"Compad II - REA" 75-2500 kVA
Howard (2, 4)	"Hi Pad REA" 10-167 kVA	"Hi Pad 3 REA" 45-2500 kVA
Kuhlman (2, 4)	"Lo-Pak ALR" 25-167 kVA	"K-PAK-3 REA" 750-2500 KVA
McGraw-Edison (2, 4)	Series 20/20 REA 25-167 kVA	"REA Pad-Mount" 75-2500 kVA
NECO/Hammond (2)	HMM-R, 10-50 kVA SP-R, 75-167 kVA	TP-R, 45-1000 kVA
Pauwels-Chance(2,4)	"Turf-Hugger-R" 10-100 KVA	"Turf-hugger-R" 45-500 KVA
H. K. Porter (2, 4) (Delta-Star)	"Low Profile U 5-R" 25-167 kVA	"Porter U5-R3" 225-2500 kVA
RTE (2, 4)	"REA Shrubline" 15-167 kVA	"REA Terra-Tran" 45-2500 kVA
United (Ky, AEC)(2, 4)	"Pad-Mount" 15-75 kVA	

- (1) 7.2/12.5 and 7.6/13.2 kV
- (2) 7.2/12.5, 7.6/13.2 and 14.4/24.9 kV
- (3) 7.2/12.5 and 7.6/13.2 kV (conditional listing for 14.4/24.9 kV)
- (4) Dual Voltage - Same as for 14.4/24.9 kV, single phase
- (5) Three-phase listing applies to 7.2/12.5 and 7.6/13.2 kV only
- (6) 14.4/24.9 kV

U an - Transformers, Distribution  
Pad-Mounted, Dead-Front

(For underground application)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>General Electric</u> Single phase transformers with internal Tranquell Under-Oil Arrester "Mini-Pad III - REA" (10-167 kVA) 7.2/12.5 and 7.6/13.2, 14.4/24.9 kV and Dual Voltage	1316 (3/6/86)	To obtain experience.
"Micro-Mini-Pad" (10-25 kVA) 7.2/12.5 and 7.6/13.2 kV	1316 (3/6/86)	To obtain experience.
Three phase transformers with internal Tranquell Under-Oil Arrester "Compad II-REA" 7.2/12.5, 7.6/13.2, 14.4/24.9 kV and Dual Voltage	1316 (3/6/86)	To obtain experience.
<u>Hevi-Duty</u> <u>Three-Phase</u> SBI-DF 750-2500 kVA 7.2/12.5 & 7.6/13.2 kV	970 (7/1/71) 1153 (12/21/78)	1. To obtain experience. 2. Test reports on 750 and 2000 kVA to be submitted as available.
<u>Square D</u> Three-phase Class 7230 REA 75-2500 KVA 12.5/7.2 & 13.2/7.6 kV	1298 (4/25/85)	To obtain experience.

Conditional List  
U an(2)  
July 1985

U an - Transformers, distribution, submersible

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Central Moloney</u> Type URD, 25-100 kVA	843 (6/16/66)	To obtain experience.
<u>General Electric</u> Type RST, 25-100 kVA	847 (8/11/66)	To obtain experience.
<u>Howard</u> 25-100 kVA	1139 (5/18/78)	To obtain experience.
<u>Kuhlman</u> 25-100 kVA	901 (9/12/68)	To obtain experience.
<u>McGraw-Edison</u> 25-100 kVA	857 (1/12/67)	To obtain experience.
<u>RTE</u> "VaulTran Type H" 15-100 kVA	870 (6/29/67)	To obtain experience.
<u>Westinghouse</u> Type SPB, 25-100 kVA	843 (6/16/66)	To obtain experience.

U cg - Switch, air, three-pole, group-operated  
for pole-mounted cable risers  
(Factory Preamsembled)

<u>Manufacturer</u>	<u>Mounting</u>	<u>Vertical Break Type</u> <u>kV</u>	<u>Side Break Type</u> <u>kV</u>
Chance	Vertical Horizontal		D7(L)15-27 D7(L)15-27
S & C	Vertical Horizontal		Alduti(L)15-25 Alduti(L)15-25
Westinghouse	Vertical	LB3-VR(L)15	

(L) Means gas or solid material full-load interrupters are accepted and available.

NOTE: Switches with factory-assembled crossarm type bases must have nonconducting crossarm type bases, nonconducting braces, and insulated interphase and control rods.

U fw  
April 1986

U fw - Secondary Tap Connector

Manufacturer

Type or Catalog No.

Blackburn

Compression Connectors

CTK 1

CTK 2

CTK 3

Raychem

Compression Connectors

CTE-300-00

CTE-400-00

CTE-500-00

Standard Split Bolt

CTE-300-00

CTE-400-00



U fz - Transformer Connector Block, Insulated  
Multiple Cable Connectors

Watertight - For use in all locations.

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Blackburn	Lug	SCU, with lugs and sleeves
Utilco	Set Screw	PTF-SS, Watertight Insulated transformer Connector block
Burndy	Lug	Stud Mole with sealing sleeve
<u>Non-Watertight - For use in above grade locations only</u>		
Alcoa	Lug	Interchange 1 ABBQ Series (Disconnectable) Use with A9 insulating boots
Alcon	Set Screw	VBTT Series with double sealing sleeve
Connector Mfg. Co.	Set Screw	Utilug Bar Connectors, Series NSC, NSM-C, DS-C, NDS-C (Permanent)
	Set Screw	Utilug Bar Connectors, Series NSSC, NSSM-C, NDQC, DQ-C (Disconnectable)
Electrical Spec. Prod.	Lug	Type SU (Permanent)
	Lug	Types SUR and RDSR (Removable) (With Types LA and AI lugs and Sleeve kits)
	Set Screw	Type UPS-I (Permanent) Type UPM-I (Disconnectable)
Fargo	Bolted	GUC Series
Homac	Set Screw	GUS-200S Series
	Lug	DF Series
	Lug	FTU 125 Series (Disconnectable) with flood seal sleeve kit
Blackburn	Set Screw	LRT Series
	Set Screw	TSB-J58C (Permanent)
	Set Screw	TSB-D58C (Disconnectable)
Penn Union	Lug	Type DBAT-LH (Disconnectable)
	Lug	Use with Series DBTB, DBTBF and DBTH lug and Sleeves kits
Reliable	Set Screw	15912-REA (Disconnectable)
RTE	Set Screw	Uni-Joint (Disconnectable)
Utilco	Set Screw	Uni-Joint (Permanent)
	Set Screw	PTF-IN (Permanent)
	Set Screw	PTF-CJU (Disconnectable)

Note: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

U fz-2  
July 1985

U fz - Transformer Connector Block, Insulated

Single Cable Connectors

Non-Watertight - For use in above grade locations only

Manufacturer

Catalog Number

Electrical Specialty Products

Type SM transformer bushing  
connector kit. (Stud to  
aluminum cables through 350 kcmil)

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.



U gp - Connector Blocks and Splices, Secondary  
Watertight - For Use In All Locations

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Alcoa	Lug	Interchange-I ABB Series Use with A-9 insulating boots
Alcon	Set Screw	VPB Series
AMP	Compression	600 Volts secondary UG Distribution 4-way and 6-way bus system
Blackburn	Lug Set Screw	Series UP(with lugs and sleeves) Series UB(1000 amp bus with sleeves)
Burndy	Lug	URD Mole
Connector Mfg. Co.	Compression	Utilug Sure Seal Splice Kits series SSK, SSKL
Electrical Spec. Prod.	Lug Set Screw	Type UC (8 AWG - 500 kcmil) (with LA lug and sleeve) Type UB (with sleeve) splice Type ACL-HSH (6 AWG - 500 kcmil)
Fargo	Set Screw	GU-500 Series
Homac	Lug Lug Set Screw Set Screw	FS-95 Series with flood seal sleeve kit (8AWG - 350 kcmil) FS-125 Series with flood seal sleeve kit (350 - 500 kcmil) SHC Series RAB Series
Kearney	Compression Compression	HCR HAR
Penn Union	Lug	DBA Series with DBTB, DBTBF and DBTH Series lug and sleeve kits
Reliable	Set Screw	15903-15908, 15910 with sleeve kit (4 AWG - 350 kcmil) 15911 with sleeve kit (500 - 750 kcmil)
RTE	Compression	Aqua Guard Splice Kit
Utilco	Set Screw	Safety Sub Splice - USPA-350SS

U gp-2  
April 1986

U gp - Connector Blocks and Splices, Secondary

<u>Non-Watertight - For Use In Above-Grade Pedestals Only</u>		
<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Blackburn	Set Screw	Type PSB-C
Electrical Spec. Prod.	Set Screw	UPC Series
Fargo	Set Screw	GUS-200 Series
Homac	Set Screw	CLR-350 Series
Utilco	Set Screw	PED-350-IN Series

U gv  
July 1985

U gv - Stake, Power Pedestal  
Refer to Construction Drawing UK5

<u>Manufacturer</u>	<u>Length Inches</u>	<u>Catalog No.</u>	
		<u>For Power Pedestal Only</u>	<u>For Joint Pedestal</u>
Fargo	42-60-72-78	UP-530S Series	UP-530J Series
Nordic	48-60-72	PM Series	
Utility Prod.	72-78-84	DM Series	DM Series

Conditional List  
U hb(1)  
April 1986

U hb - Cable Accessories  
(When ordering specify conductor size, type whether  
copper or aluminum and insulation diameter)

200 Ampere Continuous Current Rating

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Blackburn</u>		
15 kV, used with loadbreak connectors	1012 (3/15/73)	To obtain experience.
Type ABOC insulating cap	1042 (5/30/74)	
Type JLB2BA bushing plug*		
25 kV, used with non- loadbreak connectors	1110 (3/17/77)	
Type LB2CA bushing plug	1193 (8/21/80)	
Type ABOCC insulating cap		
<u>Elastimold (ESNA)</u>		
15 kV, used with loadbreak connectors	921 (6/26/69)	To obtain experience.
Style 1601-CL cable lead		
Style 1602A3R feedthru insert*	1171 (9/6/79)	
Style 1601-A3R bushing plug*		
Style 160-DR insulating cap	924 (8/7/69)	
Style 1601CIBA3R	1174 (10/18/79)	
15 kV, used with non-loadbreak connectors	921 (6/26/69)	
Style 1501-A1 bushing plug		
Style 150-DP deadend plug	842 (6/2/66)	
Style 150-DR deadend receptacle		
25 kV, used with loadbreak connectors	1232 (4/8/82)	
Style 2701-A2 bushing plug*		
25 kV, used with non-loadbreak connectors	921 (6/26/69)	
Style K-1501-A1 bushing plug		
Style k-150-DR deadend recept- acle 25 kV used with loadbreak connectors	945 (6/11/70)	
Style 270-DR deadend receptacle	1199 (11/6/80)	
35 kV, used with loadbreak connectors	1312 (1/9/86)	
Style 3701A-3 bushing plug*		
Style 370DR(G) insulating cap		

\*Asterisk indicates single or three phase. Other bushing plugs for use with  
loadbreak connectors are single phase only.

U hp - Terminations, Elbow\*

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
RTE		
15 kV Loadbreak SBT IV	1122 (9/8/77)	To obtain experience.
2604000B Series with		
test point		
2603999B Series without		
test point		
15 kV Non-loadbreak	1148 (9/28/78)	
2625166B Series		
2625175B Series		
2525175B Series		
25 kV Loadbreak SBT	1032 (12/20/73)	
2604381B Series with		
test point		
2604400B Series without		
test point		
35 kV Loadbreak SBT	1048 (8/22/74)	
2603922B Series with		
test point		
2604006B Series without		
test point		

\*NOTE: Non-loadbreak devices require that connections be made in non-energized  
conditions only.

For application of loadbreak elbows on three-phase systems, refer to REA  
Bulletin 61-15 dated June 1974.

## Conditional List

U hp(4)

April 1986

U hp - Terminations, Elbow  
(rated for switching on three-phase systems)

(When ordering, specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Kearney</u>		
15 kV, Loadbreak with voltage test point 1115-FC Series	1005 (12/7/72)	To obtain experience.
	1077 (11/13/75)	
<u>RTE</u>		
15 kV, Loadbreak SBT IV 2604600B Series with test point 2604599B Series without test point	1032 (12/20/73)	To obtain experience.
	1122 (9/8/77)	
25 kV, Loadbreak SBT 2604740B Series with test point 2604741B Series without test point	1148 (9/28/78)	
<u>Elastimold (ESNA)</u>		
15 kV, Loadbreak without voltage test point Style 165-LR	1068 (6/26/75)	To obtain experience.
15 kV, Loadbreak with voltage test point Style 166-LR		
25 kV, Loadbreak without voltage test point Style 271-LR		
25 kV, Loadbreak with voltage test point Style 272-LR		
35 kV, Loadbreak without voltage test point Style 375LR	1312 (1/9/86)	
35 kV, Loadbreak with voltage test point Style 376LR		
<u>General Electric</u>		
15 kV, Loadbreak 9U01A--4--Series	1133 (2/16/78)	To obtain experience.
25 kV, Loadbreak 9U01B--5--Series		

U hp - Terminations, Elbow  
(rated for switching on three-phase systems)

(When ordering, specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Blackburn</u>		
15 kV, Loadbreak	1054 (11/27/74)	To obtain experience.
JT2B (without test point)		
JT2BT (with test point)	1311 (12/19/85)	
25 kV Loadbreak	1304 (8/8/85)	To obtain experience.
JT2C (without test point)		
JT2CT (with test point)		
<u>Joslyn</u>		
15 kV, Loadbreak		
LBT112M (without test point)	1162 (4/26/79)	To obtain experience.
LBT112MT (with test point)	1165 (6/7/79)	
25 kV, Loadbreak		
LBT262M (without test point)	1240 (8/12/82)	To obtain experience.
LBT262TM (with test point)		
15 kV, Fused Loadbreak		
SPF-T (with test point)	1251 (1/20/83)	To obtain experience.



Conditional List  
U hq(1)  
April 1986

U hq - Terminations, Multipoint

Use with Loadbreak Connectors

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		
15 kV		
2-way bushing, 163J2*	1068 (6/26/75)	To obtain experience.
3-way bushing, 163J3*	1068 (6/26/75)	
3-way bushing, 1601-J3	921 (6/26/69)	
4-way bushing, 163J4*	1068 (6/26/75)	
4-way bushing, 1601-J4	945 (6/11/70)	
35 kV	1312 (1/9/86)	
2-way bushing, 373J2*		
3-way bushing, 373J3*		
4-way bushing, 373J4*		
<u>RTE</u>		
LBC-2, 2-way bushing, 15 kV	924 (8/7/66)	To obtain experience.
2600730C04 - single phase		
2604883B01 - three phase		
LBC-3, 3-way bushing, 15 kV	1126 (11/3/77)	
2600730C08 - single phase		
2604883B02 - three phase		
LBC-4, 4 way bushing, 15 kV		
2600730C12 - single phase		
2604883B03 - three phase		
LBC-2, 2-way bushing, 25 kV	1148 (9/28/78)	
2604954B01 - three phase		
LBC-3, 3-way bushing, 25 kV		
2604954B02 - three phase		
LBC-4, 4-way bushing, 25 kV		
260495B03 - three phase		
<u>General Electric</u>		
15 kV*		
2-way bushing 9U07A--2-0	1131 (1/19/78)	To obtain experience.
3-way bushing 9U07A--3-0		
4-way bushing 9U07A--4-0	1158 (3/1/79)	
25 kV*		
2-way bushing 9U07B--2-0	1016 (5/10/73)	
3-way bushing 9U07B--3-0		
4-way bushing 9U07B--4-0	1158 (3/1/79)	
<u>Blackburn</u>		
JJ2BA* (2, 3, 4-way) 15 kV	1110 (3/17/77)	To obtain experience.

\*NOTE: Asterisk indicates single or three phase. Other termination for use  
with loadbreak connectors are single phase only.



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## U hq - Terminations, Feed-Through and Parking Bushings

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u> 35 kV Feed-thru, 373FT Parking Bushing, 371SOP	1312 (1/9/86)	To obtain experience.



U hq - Terminations, Multipoint

Use with Non-loadbreak Connectors  
(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		
Style 150-T, T-Tap (15 kV)	873 (7/27/67)	To obtain experience.
Style K-150-T, T-Tap (25 kV)	921 (6/26/69)	
271J2, 2-way bushing, 25 kV	1199 (11/6/80)	To obtain experience
271J3, 3-way bushing, 25 kV		
271J4, 4-way bushing, 25 kV		
<u>Blackburn</u>		
J2CA (2, 3, 4-way) 25 kV	1110 (3/17/77)	To obtain experience.
<u>RTE</u>		
VBJ-2, 2-way bushing, 15 kV, 2604670B01	1126 (11/3/77)	To obtain experience.
VBJ-3, 3-way bushing, 15 kV, 2604670B02		
VBJ-4, 4-way bushing, 15 kV, 2604670B03		

U hr  
April 1986

U hr - Secondary tap or splice cover, submersible

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
Bishop	Splice-Wrap
Blackburn	Type WDBS (#2 through #4/0) Type DBS (250 KCMIL through 1000 KCMIL)
Connector Mfg. Co.	Utilug Sure Seal
Elastimold (ESNA)	Style 86
Electrical Spec. Prod.	TSC Series
Homac	FSS Series
Kearney	Aqua-Seal Kit
3M	PST Series 8400
RTE	Aqua-Guard

Heat Shrink Tubing (with sealant throughout)

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
AMP	Black heat-shrink tubing
Blackburn	HS cable sleeves
Electrical Spec. Prod.	HSH
Panduit	Heat shrink insulating cover
Raychem	WCS cable sleeves
Sigmaform Corporation	Sigmaform heat-shrinkable products